



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/730,143
Applicant : Kouta Fukui
Filed : December 9, 2003
Title: PHOTOTHERMOGRAPHIC MATERIAL
Art Unit : 1752
Examiner: Thorl Chea
Docket No: FS-F03215-01

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. §1.132

Sir:

I, Kouta Fukui, do declare and state as follows:

I graduated from the Tokyo Institute of Technology, Interdisciplinary Graduate School of Science and Engineering with a Master's Degree in Engineering in March 1990;

I joined Fuji Photo Film Co., Ltd.(Currently FujiFilm Corporation) in April 1990, and since that time I have been engaged in research and development in the field of silver halide photographic light-sensitive materials and developers thereof and since

1997 in the field of photothermographic materials; and

I am familiar with the Office Action of June 12, 2007, and understand that the Examiner has rejected Claims 1, 3-5, and 8-10 under 35 U.S.C. § 112, 1st paragraph and § 103(a) as being unpatentable over the combination of Toya et al (US Patent No. 5,998,126), Siga et al (US Patent No. 4,332,889), Suzuki et al (US Patent No. 4,211,839), EP 1096310, Matsumoto et al (US Patent No. 5,958,126), and Toya et al (US Patent No. 5,656,419).

The following additional experiments were carried out under my supervision in order to make the advantages of the subject matter disclosed and claimed in the above-identified application more clear.

Comparative experiment

Sample Nos. 601 to 613 were prepared in the same manner as the photosensitive material sample of Experiment No. 1 in Table 1 of Example 1 described in the specification of the present invention, except for changing an additive amount and a kind of reducing agent-1, a kind of reducing agent-2, and an additive amount and a kind of polyhalogen compound.

Formula (H) in mole ratio (Formula (H)/organic silver salt) described at the right column of the additional data-1 denotes the total number of moles of organic polyhalogen compounds represented by Formula (H).

In the column of organic polyhalogen compound in the additional data 1, the column in which the compound number is not indicated except for compound 4-3, compound 4-5, and compound 4-2 denotes that organic polyhalogen compound 1 and 2 were used respectively in the same manner as the description in Table 1.

Additionally, Sample Nos. 701 to 709 were prepared in the same manner as the photosensitive material sample of Experiment No. 1 in Table 1 of Example 1 described in the specification of the present invention, except that silver iodobromide (silver iodide 70 mole %) in which 30 mole % of potassium iodide in Sample Nos. 1, 2, and 3 was replaced by potassium bromide respectively was used.

These photosensitive materials were processed in the same manner as those of Example 1, and the fresh photographic properties and light/heat image storability ΔD_{min} were evaluated in the same manner as for the photosensitive materials of Example 1.

The obtained results are shown in the additional data 1 and 2 with the results indicated in Table 1 of Experiment 1.

Table 1

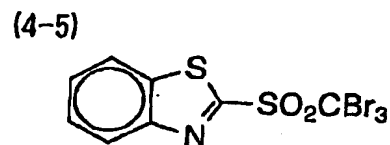
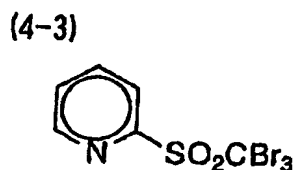
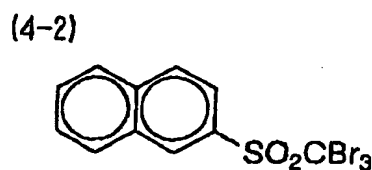
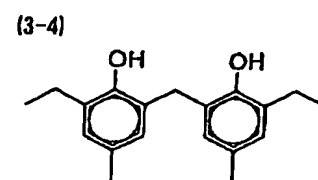
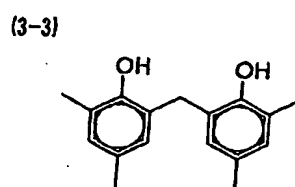
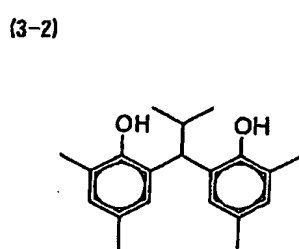
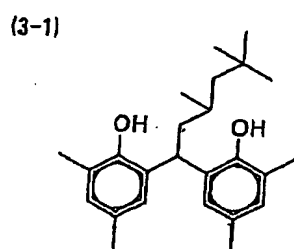
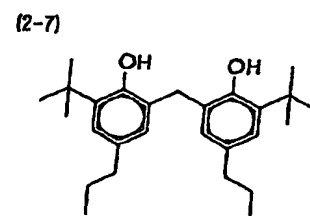
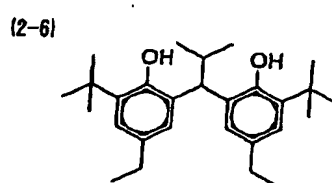
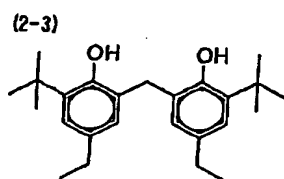
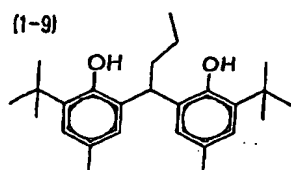
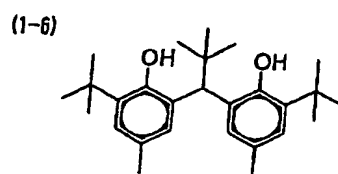
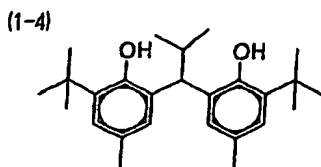
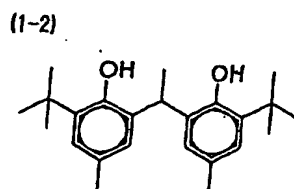
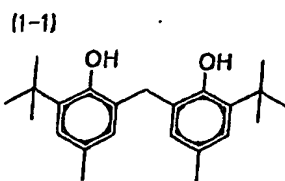
Experiment No.	Reducing agent-1		Reducing agent-2		Organic polyhalogen compound-1	Organic polyhalogen compound-2	Fresh photographic performance				Photo-thermographic stability ΔD_{min}	Remarks
	Kind	Amount (mole/m ²)	Kind	Amount (mole/m ²)			Dmin	Sensitivity	Gradation	Color tone		
1	1-9	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.16	100	2.8	0	0.00	Invention
2	3-3	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.16	98	2.8	+2	0.00	Comparison
3	3-1	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.16	97	2.8	+2	0.00	Comparison
4	1-9	2.0×10^{-3}	-	-	1.9×10^{-4}	2.9×10^{-4}	0.16	115	3.2	+1	0.00	Invention
5	1-9	1.0×10^{-3}	3-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	113	2.8	0	0.00	Invention
6	1-9	1.0×10^{-3}	2-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	115	2.8	0	0.00	Invention
7	1-1	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.16	103	2.8	0	0.00	Invention
8	1-1	1.0×10^{-3}	3-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	116	2.8	0	0.00	Invention
9	1-1	1.0×10^{-3}	2-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	115	2.8	0	0.00	Invention
10	3-3	2.0×10^{-3}	-	-	-	-	0.85	-	-	-	-	Comparison
11	1-9	2.0×10^{-3}	-	-	-	-	0.98	-	-	-	-	Comparison

Additional Data 1

Experi- ment No.	Reducing agent-1		Reducing agent-2		Organic polyhalogen compound-1	Organic polyhalogen compound-2	Fresh photographic performance				Photo-thermo-graphic storability ΔD_{min}	Remarks	
	Kind	Amount (mole/m ²)	Kind	Amount (mole/m ²)			Amount (mole/m ²)	Dmin	Sensitivity	Gradation		Color tone	formula(H) / organic silver salt (mole ratio)
601	1-9	1.0×10^{-3}	2-6	1.0×10^{-3}	$4-3$ 1.9×10^{-4}	2.9×10^{-4}	0.16	113	3.0	+1	0.00	Invention	0.04
602	1-9	1.0×10^{-3}	2-7	1.0×10^{-3}	$4-5$ 1.9×10^{-4}	2.9×10^{-4}	0.16	109	2.9	+1	0.00	Invention	0.04
603	1-9	1.0×10^{-3}	3-2	1.0×10^{-3}	$4-10$ 1.9×10^{-4}	2.9×10^{-4}	0.16	109	2.9	+1	0.00	Invention	0.04
604	1-9	1.0×10^{-3}	3-4	1.0×10^{-3}	$4-2$ 1.9×10^{-4}	2.9×10^{-4}	0.16	121	3.2	+1	0.00	Invention	0.04
605	1-9	1.0×10^{-3}	2-6	1.0×10^{-3}	7.6×10^{-4}	1.2×10^{-3}	0.15	112	2.7	0	0.00	Invention	0.17
606	1-9	1.0×10^{-3}	2-7	1.0×10^{-3}	1.1×10^{-3}	1.7×10^{-3}	0.15	110	2.7	0	0.00	Invention	0.25
607	1-2	1.0×10^{-3}	3-2	1.0×10^{-3}	3.8×10^{-4}	5.8×10^{-4}	0.16	112	2.8	0	0.00	Invention	0.08
608	1-4	1.0×10^{-3}	3-4	1.0×10^{-3}	3.8×10^{-4}	5.8×10^{-4}	0.16	113	2.8	0	0.00	Invention	0.08
609	1-6	1.0×10^{-3}	2-6	1.0×10^{-3}	3.8×10^{-4}	5.8×10^{-4}	0.16	113	2.8	0	0.00	Invention	0.08
610	1-1	1.0×10^{-3}	2-6	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	112	2.8	0	0.00	Invention	0.04
611	1-1	1.0×10^{-3}	2-7	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	110	2.8	0	0.00	Invention	0.04
612	1-1	1.0×10^{-3}	3-2	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	112	2.9	0	0.00	Invention	0.04
613	1-1	1.0×10^{-3}	3-4	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.16	113	2.9	0	0.00	Invention	0.04

Additional Data-2

Experiment No.	Reducing agent-1		Reducing agent-2		Organic polyhalogen compound-1	Organic polyhalogen compound-2	Fresh photographic performance				Photographic stability ΔD_{min}	Remarks
	Kind	Amount (mole/m ²)	Kind	Amount (mole/m ²)			Dmin	Sensitivity	Gradation	Color tone		
701	1-9	1.0×10^{-3}	3-3	1.0×10^{-3}	3.8×10^{-4}	5.8×10^{-4}	0.17	116	2.8	0	0.00	Invention
702	3-3	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.17	103	2.8	+2	0.00	Comparison
703	3-1	2.0×10^{-3}	-	-	3.8×10^{-4}	5.8×10^{-4}	0.17	102	2.8	+2	0.00	Comparison
704	1-9	1.0×10^{-3}	2-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.17	119	3.2	+1	0.00	Invention
705	1-9	1.0×10^{-3}	3-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.17	118	2.8	0	0.00	Invention
706	1-9	1.0×10^{-3}	2-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.17	120	2.8	0	0.00	Invention
707	1-1	1.0×10^{-3}	2-3	1.0×10^{-3}	3.8×10^{-4}	5.8×10^{-4}	0.17	118	2.8	0	0.00	Invention
708	1-1	1.0×10^{-3}	3-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.17	120	2.8	0	0.00	Invention
709	1-1	1.0×10^{-3}	2-3	1.0×10^{-3}	1.9×10^{-4}	2.9×10^{-4}	0.17	119	2.8	0	0.00	Invention



From the results shown in the comparison of Samples Nos. 1, 4 to 9, Samples Nos. 601 to 613 and Samples Nos. 701 to 709 with Comparative Samples Nos. 2 and 3, it is clearly seen that the Samples in the present invention are unexpectedly superior compared to the Comparative Samples, especially in terms of the color tone of the silver image.

That is, while the color tone of the silver image in the Comparative Samples is evaluated as Value +2 (the color tone of the silver image has high blue tinge), the silver image tone in the Samples of the present invention are evaluated as Value +1 (only slight blue tinge in the color tone of the silver image) or Value 0 (good tone balance and pure black tone). The evaluations of "color tone of the silver image has high blue tinge" and the evaluation of "only slight blue tinge in the color tone of the silver image" cause remarkably different results especially in photothermographic film for medical diagnostics.

Therefore it can be said that the improved effects of color tone of the silver image provided in the present invention show unexpectedly remarkable results for a person skilled in the art.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATE: December 4, 2007

KOUTA FUKUI

Kouta Fukui